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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Art Unit : 1764
Examiner : Walter Dean Griffin
Serial No. : 09/601,414
Filed : August 1, 2000
Inventors : Masahito Yoshikawa
: Hajime Kato
Title : METHOD FOR
: 1 CONVERTING
: AROMATIC COMPOUNDS



PATENT & TRADEMARK OFFICE

Docket No.: 1344-00

Confirmation No.: 2306

Dated: February 20, 2003

RESPONSE

Commissioner for Patents
Washington, DC 20231

Sir:

Claims 1 – 12 are pending in the application. Applicants respectfully submit that this reply fully responds to the outstanding Office Action mailed on August 21, 2002.

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Continued Examination under CFR §1.114

Applicants note with appreciation the acceptance of their Request for Continued Examination and the submission filed on August 12, 2002.

Claim Rejections - 35 U.S.C. §103

Applicants claimed method for isomerizing aromatic compounds uses a zeolite having certain claimed characteristics. Specifically those claimed characteristics are:

(1) when said pore aperture has a circular or a non-circular cross section and accordingly has a minimum diameter and a maximum diameter, the minimum value of the pore aperture diameter of the major channels therein is larger than 0.65 nanometers, and the maximum value thereof is larger than 0.70 nanometers, and wherein

(2) said major channels do not intersect any others having larger apertures than an oxygen 10-membered ring.

It is well settled that to sustain an obviousness rejection under 35 U.S.C. §103, the cited references must teach or suggest each and every claimed element. Applicants respectfully submit that none of the references teach or suggest each of these claimed characteristics. Accordingly, although Applicants disagree with the statement in the Office Action that it would be obvious to modify the references to include the specific aromatic compounds of the claims, we need not address that here, since none of the references teaches or suggests either characteristic (1) or (2) above, and therefore does not teach or suggest every element of the claim.

The Office Action, with regard to Davis, states "the CIT-5 zeolite is formed and synthetic and has the claimed characteristics." Davis, however, is utterly silent with respect to pore size and, furthermore, does not teach or suggest the lack of intersections with channels of size greater than a 10-membered oxygen ring as required by independent Claim 1.

Similarly, the Office Action states, with reference to Zones, that "the SSZ-31 zeolite is formed and synthetic and has the claimed characteristics." Once again, we note that Zones does not teach or suggest either of the claimed pore size or the lack of intersections as claimed.

Also, the Office Action notes that Davis discloses that a CIT-5 zeolite is employed as a catalyst of the isomerization of polyalkyl-substituted aromatics, but that Davis does not disclose the specific aromatic compounds of Claim 1. However, it is said to be obvious to one of ordinary skill in the art because the claimed compounds fall within the general class of polyalkyl-substituted aromatic compounds disclosed by Davis.

The Applicants agree that Davis discloses isomerization of polyalkyl-substituted aromatics. However, it is only disclosed as "isomerization polyalkyl substituted aromatics (e.g., m-xylene)" at Column 10, lines 29 – 30. As a consequence, the Office Action considered that polyalkyl-substituted aromatics contain "(a) aromatic compounds having at least three substituents" as claimed in Claim 1 and, therefore, it is obvious. The facts, however, demonstrate otherwise.

The Applicants enclose a figure of molecular models. The figure demonstrates that the three substituted aromatics such as 3,5-dichlorotoluene are very bulky in comparison to the two substituted aromatics such as m-xylene. Such facts are well known to those skilled in the art. Therefore, David et al. may have considered that CIT-5 zeolite is able to be employed for the isomerization of two substituted aromatics such as m-xylene, but would not have considered CIT-5 for three substituted aromatics, because they did not analyze the pore aperture size of the zeolite at that time.

Therefore, the solicited claims are anything but obvious over the cited references.

Neither Davis nor Zones teach or suggest either characteristic required by Applicants' independent Claim 1, and certainly do not teach or suggest both characteristics (1) and (2) as required by the claim. Without these characteristics, or even knowledge of their importance, those skilled in the art would have no reasonable expectation of success in using the zeolite of Davis or Zones for the claimed isomerization process. Accordingly, Applicants respectfully request withdrawal of the 35 U.S.C. §103 rejections based individually on Davis and Zones since neither teaches or suggests each and every claimed element or provides a reasonable expectation of success.

Claims 1 - 12 are further rejected under 35 U.S.C. §103 over WO '486. In this case, the Office Action states "the UTD-1 zeolite is formed and synthetic and has the claimed characteristics." As with Davis and Zones above, WO '486 is deficient with regard to at least one of the claimed

characteristics. Specifically, WO '486 does not teach or suggest the use of a zeolite where there is no intersection of major channels as currently claimed. As with Davis and Zones, there is utterly no discussion in WO '486 at all concerning such intersections and the effect that they may have on the isomerization or catalyst reaction. Accordingly, WO '486 simply does not teach or suggest or even recognize the importance of limiting the number of intersections between major channels within the zeolite.

Applicants respectfully submit that none of the cited references alone or in combination teach or suggest each and every claimed element or a reasonable expectation of success when modifying the references to include each and every element. Accordingly, Applicants respectfully request withdrawal of all outstanding rejections based on 35 U.S.C. §103.

In light of the reasons presented above, Applicants respectfully submit that all pending claims are now in condition for allowance. Early reconsideration and allowance of all pending claims is, therefore, respectfully requested.

Respectfully submitted,



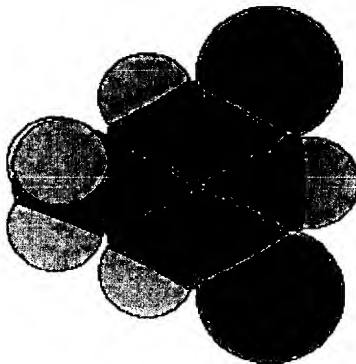
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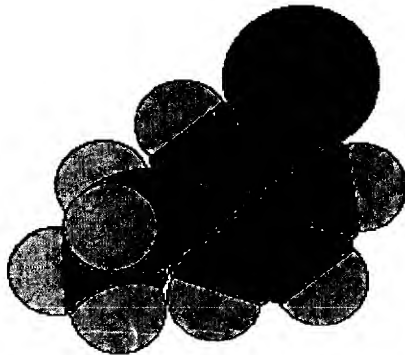
Examples of large aromatic compounds defined at the end of our Claim 1

Example of (a)



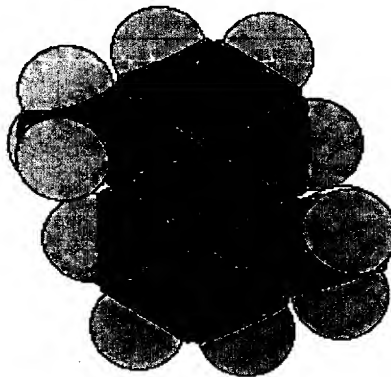
3,5-dichlorotoluene

(b)



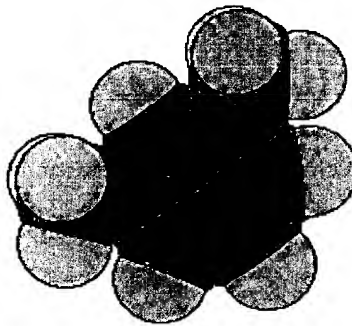
m-bromoethylbenzene

(c)



1,5-dimethylnaphthalene

Reference



m-xylene